



Docket No.: UIOWA-0052

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Johna LEDDY and Chaminda HETTIGE

: Group Art Unit: 1754

Serial No.: 10/687,918

: Examiner: EXAMINER

Filed: October 20, 2003

: Customer No.: 34610

For: MAGNETICALLY MODIFIED ELECTRODES CONTAINING AT LEAST  
ONE CATALYST COMPONENT THAT MEDIATES A SUBATOMIC PARTICLE  
TRANSFER PROCESS

INFORMATION DISCLOSURE STATEMENT

U.S. Patent and Trademark Office  
2011 South Clark Place  
Customer Window  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, Virginia 22202

Sir:

Pursuant to 37 C.F.R. 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the indicated date. Applicant reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered. This statement should not be construed as a representation that a search has been made, that information cited in the statement is considered to be and/or is material to patentability, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith. It is further understood that the Examiner will consider information that was cited or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. §120. 1138 OG 37, 38 (May 19, 1992).

X 1. This Information Disclosure Statement is being filed (i) within three months of the U.S. filing date of a U.S. application other than a CPA continued prosecution application under §1.53(d) OR (ii) within three months of the date of entry of the national stage as set forth in §1.491 in an international application OR (iii) before the mailing date of a first Office Action on the merits. No certification or fee is required. 37 C.F.R. §1.97(b).

— 2. This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application. 37 C.F.R. §1.97(c).

— a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart

foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. 1.97(e)(1).

- b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. 1.97(e)(2).
- c. Attached is our check no. \_\_\_\_\_ in the amount of \$180.00 in payment of the fee under 37 C.F.R. 1.17(p). Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.
- 3. This Information Disclosure Statement is being filed after the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee. Attached is our check no. \_\_\_\_\_ in the amount of \$180.00 in payment of the fee under 37 C.F.R. 1.17(p). Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached. 37 C.F.R. §1.97(d).
- a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. 1.97(e)(1).
- b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. 1.97(e)(2).
- 4. Others:
- X 5. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
FLESHNER & KIM, LLP



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Date: March 23, 2004

DRM\SJH:dcp

**Please direct all correspondence to Customer Number 34610**

<p style="text-align: center;"><b>LIST OF PRIOR ART CITED BY APPLICANT</b>  <b>(PTO-1449)</b></p> <p style="text-align: right; font-size: small;">SEARCHED <i>[initials]</i> MAR 23 2004 INDEXED SERIALIZED FILED U.S. PATENT AND TRADEMARK OFFICE</p>			ATTY. DOCKET NO. <b>UIOWA-0052</b>		APPLN. SERIAL NO. <b>10/687,918</b>	
			<b>APPLICANT(S)</b> <b>Johna LEDDY and Chaminda HETTIGE</b>			
			CUSTOMER NO. 34610			
			FILING DATE <b>October 20, 2003</b>		GROUP <b>1754</b>	
			<b>U.S. PATENT DOCUMENTS</b>			
EXAMINER'S INITIALS	*PATENT NO.	*ISSUE DATE	*INVENTOR NAME	CLASS	SUBCLASS	FILING DATE
	5,422,246	06/06/95	KOOPAL et al.	435	14	06/14/93
	6,615,078 B1	09/02/03	BURSON et al.	604	20	04/21/00
	5,208,154	05/04/93	WEAVER et al.	435	176	04/08/91
	4,613,541	09/23/86	ISODA	428	212	12/31/85
	4,711,245	12/08/87	HIGGINS et al.	128	635	05/07/84
	5,391,272	02/21/95	O'DALY et al.	204	153.12	03/08/94
	6,071,392	06/06/00	YAMAMOTO et al.	204	403	06/03/98
	5,298,144	03/29/94	SPOKANE	204	403	09/15/92
	5,011,786	04/30/91	ISODA et al.	437	51	06/23/89
<b>U.S. PATENT APPLICATION PUBLICATIONS</b>						
	*PATENT APPLN. PUB. NO.	*PUB. DATE	*APPLICANT	CLASS	SUBCLASS	
	2003/0104119A1	06/05/03	WILSON et al.	427	2.1	11/21/01
	2003/0175803A1	09/18/03	TSIONSKY et al.	435	7.1	09/10/02
<b>U.S. PATENT APPLICATIONS</b>						
	*APPLN. NO.	*FILING DATE	*INVENTOR	CLASS	SUBCLASS	
<b>FOREIGN PATENT DOCUMENTS</b>						
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation Yes No
	WO 02/01228A2	01/03/02	WIPO			
	WO00/43783	07/27/00	WIPO			
	JP62215861A2	09/22/87	Japan (Full Japanese Text)			Abst
	WO02/47246A1	06/13/02	WIPO			
	JP63010562A2	01/18/88	Japan (Full Japanese Text)			Abst
<b>OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)</b>						
	C. Hettige et al., "Electron Transfer Rate Enhancement of Myoglobin in Magnetic Fields," 202 <sup>nd</sup> Meeting of the Electrochemical Society (October 21, 2002) p. 1.					
	L.A. Zook, "Morphological Modification of Nafion for Improved Electrochemical Flux," Thesis, December 1996, pp. 1-134.					
	H. Pan et al., "Effect of magnetization treatment on the electrochemical properties of La <sub>0.9</sub> Sm <sub>0.1</sub> Ni <sub>2.0</sub> Co <sub>3.0</sub> electrode alloy," J. Alloys and Compounds, Vol. 327, 2001, pp. 136-140.					
EXAMINER			DATE CONSIDERED			

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

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**U.S. PATENT DOCUMENTS**

EXAMINER'S INITIALS	*PATENT NO.	*ISSUE DATE	*INVENTOR NAME	CLASS	SUBCLASS	FILING DATE
	4,902,555	02/20/90	ISODA et al.	428	195	07/13/87
	5,205,920	04/27/93	OYAMA et al.	204	403	03/02/90
	5,272,087	12/21/93	EL MURR et al.	435	291	10/16/90
	6,503,701 B1	01/07/03	BAUER	435	4	11/21/01
	6,342,347 B1	01/29/02	BAUER	435	4	10/22/99
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	5,710,011	01/20/98	FORROW et al.	435	25	03/06/95
	4,978,610	12/18/90	FORREST et al.	435	7	07/23/87
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	*PATENT APPLN. PUB. NO.	*PUB. DATE	*APPLICANT	CLASS	SUBCLASS	
	2003/0150739A1	08/14/03	MOROZOV et al.	205	133	03/03/03
	2003/0124572A1	07/03/03	UMEK et al.	435	6	07/30/02

**U.S. PATENT APPLICATIONS**

	*APPLN. NO.	*FILING DATE	*INVENTOR	CLASS	SUBCLASS	

**FOREIGN PATENT DOCUMENTS**

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
	WO87/07386	12/03/87	WIPO				
	JP2001252553	09/18/01	Japan (Full Japanese Text)			Abst	
	JP2000030743	01/28/00	Japan (Full Japanese Text)			Abst	
	JP11323654	11/26/99	Japan (Full Japanese Text)			Abst	

**OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)**

	Johna Leddy et al., "Magnetically Modified Fuel Cells," 39 <sup>th</sup> Power Source Proceedings, 2000, pp. 144-147.
	D.A.J. Rand, "Battery Systems for Electric Vehicles - A State-of-the-Art Review," Journal of Power Sources, 1979, Vol. 4, pp. 101-143.
	Robert F. Nelson, "Power requirements for batteries in hybrid electric vehicles," Journal of Power Sources, 2000, Vol. 91, pp. 2-26.
	Lester B. Lave et al., "Environmental Implications of Electric Cars," Science, Vol. 268, May 19, 1995, pp. 993-995.

EXAMINER	DATE CONSIDERED

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	3,409,471	11/05/68	F.V. STURM et al.			06/18/64
	3,811,952	05/21/74	SIWERSSON et al.	136	86 A	06/20/73
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**U.S. PATENT APPLICATIONS**

	*APPLN. NO.	*FILING DATE	*INVENTOR	CLASS	SUBCLASS	

**FOREIGN PATENT DOCUMENTS**

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
	JP2001155746	06/08/01	Japan (Full Japanese Text)			Abst	

**OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)**

	Alexander H. Tullo, "Maintaining A Charge," C&EN Northeast News Bureau, July 15, 2002, pp. 25-26.
	Nicholas J. Turro et al., "Magnetic Field and Magnetic Isotope Effects in Organic Photochemical Reactions. A Novel Probe of Reaction Mechanisms and a Method for Enrichment of Magnetic Isotopes," Acc. Chem. Res., 1980, Vol. 13, pp. 369-377.
	M. Feng et al., "Raman Spectroscopic and Electrochemical Characterization of Myoglobin Thin Film: Implication of the Role of Histidine 64 for Fast Heterogeneous Electron Transfer," J. Am. Chem. Soc., Vol. 123, No. 13, April 4, 2001, pp. 3013-3020.
	A.F. Nassar et al., "Catalytic Reduction of Organohalide Pollutants by Myoglobin in a Biomembrane-like Surfactant Film," J. Am. Chem. Soc., Vol. 117, No. 44, November 8, 1995, pp. 10986-10993.

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	6,355,166 B1	03/12/02	AMARASINGHE et al.	210	223	10/29/99
<b>U.S. PATENT APPLICATION PUBLICATIONS</b>						
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<b>U.S. PATENT APPLICATIONS</b>						
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<b>FOREIGN PATENT DOCUMENTS</b>						
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation Yes      No
<b>OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)</b>						
	J.F. Rusling et al., "Enhanced Electron Transfer for Myoglobin in Surfactant Films on Electrodes," J. Am. Chem. Soc., Vol. 115, No. 25, December 15, 1993, pp. 11891-11897.					
	D. Mimica et al., "Electroreduction of nitrite by hemin, myoglobin and hemoglobin in surfactant films," J. Electroanalytical Chemistry, Vol. 497, 2001, pp. 106-113.					
	J. Niu et al., "The direct electrochemistry of cryo-hydrogel immobilized myoglobin at a glassy carbon electrode," Vol. 399, Nos. 1-2, December 19, 1995, pp. 41-46.					
	J.F. Rusling, "Liquid crystal surfactant films for electrochemical catalysis," Microporous Materials, Vol. 3, 1994, pp. 1-16.					
	I. Hamachi et al., "Functional Conversion of Myoglobin Bound to Synthetic Bilayer Membranes: From Dioxygen Storage Protein to Redox Enzyme," J. Am. Chem. Soc., Vol. 113, No. 25, December 4, 1991, pp. 9625-9630.					
	Kanya Yamazaki et al., "Secondary nonaqueous electrolyte batteries containing magnetic additives," JP10106577, April 24, 1998 (Abstract only).					
	Esther S. Takeuchi "Magnetically compatible electrochemical cell," EP0980105, February 16, 2000 (Abstract only).					
	J. Maruo et al., "Non-Aqueous Electrolyte Secondary Battery," JP10106581, April 24, 1998 (Abstract only).					
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